LEGIONELLA RISK ASSESSMENT

Legionella is a type of bacteria that, when a water system in a building or industry is contaminated, can cause health hazards to human health. It is capable of infecting humans, causing two types of diseases: Pontiac Fever, which closely resembles the flu and an atypical pneumonia known as legionellosis or Legionnaires' disease, which can be fatal in 15% of cases and up to 50% when infection occurs in hospitals.

There are currently more than 60 species identified, of which *Legionella pneumophila* is the most common in clinical cases but not the only one that can infect humans. *Legionella* was first identified in 1977 after a mysterious outbreak of pneumonia that occurred among members of the American Legion who met the previous year in Philadelphia. There were 221 infected and 34 dead.

Infection occurs through inhalation when the host breathes water droplets contaminated by *Legionella*. The diagnosis consists of the identification of symptoms, clinical examinations, and the surveillance of sites affected by outbreaks of Legionnaires' disease. The potential development of a lung infection closely resembles conventional pneumonia, sometimes making it harder to get to a correct diagnosis.

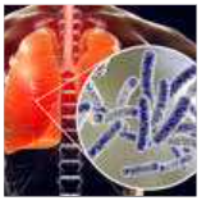
SOURCES OF CONTAMINATION

Natural Habitat
Legionella may be present in any natural water source.

Amplification
Legionella grows rapidly under certain conditions such as water stagnation and tepid water temperatures.

Dissemination out of the system
Building water systems produce aerosols/sprays such as cooling towers, showers, etc.

Aerosol Contact
People can come into contact with the contaminated aerosol.



Host Susceptibility
Gender, age, respiratory diseases, immunodeficiency, smokers, and diabetics are contributing health risk factors.

Bacteria Virulence
Very aggressive bacterium to the host, with *Legionella pneumopholia* serogroup 1 being the most virulent strain.

Although potable water is treated prior to supply to buildings and facilities, there is no guarantee that the water in the building will be free from bacterial contamination.

Legionella is a risk arising from human activities (since in its natural habitat it poses no foreseeable risk) and therefore whoever designs, manages, operates or owns a building is responsible for the damage that its water systems and components (showers, cooling towers, decorative fountains, spas, swimming pools, humidifiers, irrigation systems, etc.) may cause to the lives and health of others.

To prevent *Legionella*, an active risk management and risk minimization process is required in the water systems of a building or industry. NSF performs *Legionella* risk assessments, which assists customers with the difficult task of identifying, managing, and minimizing the risks of this bacterium to protect their employees, their clients, visitors, and the surrounding community.

We assess all components and operating activities of building water systems (hospital, shopping mall, hotel, business condominium, data center, industry, etc.) to identify hazards, prioritize recommended actions, and ultimately suggest an improvement plan and an operation plan to manage the risk of *Legionella* in each system.

Our risk assessment uses the HACCP method and is based on the most important and recognized worldwide technical standards for the management of *Legionella* approved by the World Health Organization (WHO/UN), OSHA in the USA (Occupational Safety and Health Administration), HSE in the United Kingdom (Health and Safety Executive), NSF P453, ASHRAE (International Technical Association Standard for HVAC) among other international organizations.

Every building and industry needs to carry out a risk assessment of *Legionella*, such as:

- Hospitals and health centers
- Clinical laboratories
- Nursing homes
- Schools and universities
- Corporate buildings
- Residential condominiums
- Hotels & resorts
- Spas
- Shopping malls
- Call centers
- Data processing centers
- Research centers
- Ports and airports
- Food & beverage industries
- Pharmaceutical industry
- Steel industry
- Petrochemical industry
- Chemical industry
- Thermoelectric and nuclear power plants
- Oil rigs
- Ships, boats and cruises

Types of water systems that are assessed:

- Hot and cold drinking water systems
- Cooling systems
- Pools & spas
- Decorative fountains
- Irrigation systems
- Industrial systems
- Reuse systems
- Rainwater systems
- Medical devices
- Any other water system with foreseeable risks

CONTACT US

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